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Requirements for Collaborative Decision Support Systems in Wound Care: No Information Continuity Without Management Continuity

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Abstract. Health IT systems are employed to support continuity of care via information continuity, while management continuity is often neglected. This study aims at investigating issues of management continuity when developing a collaborative decision support system for chronic wounds. Thirty-three experts from a variety of professions and disciplines discussed problems and possible solutions in four workshops. The following topics emerged from the discussion: existing networks involving payers, responsibilities as well as good discharge management. These topics clearly address management continuity and are also relevant for the scenario of inter-professional wound care across different settings.

Keywords. Management continuity, continuity of care, expert workshops, qualitative research

1. Introduction

Chronic Diseases, such as chronic wounds, are demanding for patients and healthcare providers. Due to the chronicity, all actors should be anxious to ensure seamless care. Continuity of care, the underlying concept of seamless care, is composed of information continuity, management continuity and relational continuity [1], whereby management continuity is defined as *"a consistent and coherent approach to the management of a health condition that is responsive to a patient's changing needs"* [1]. This includes discharge management, successful and rapid transfer between services, and the implementation of individualised care plans [2, 3]. When implementing health IT systems, information continuity is the one that is primarily addressed and focussed [4], while management continuity is often neglected. However, organisational and management issues play a paramount role for the success of health IT systems [5].

The aim of this study, therefore, was to investigate the challenges and conditions of management continuity, which healthcare providers must consider when defining

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scenarios for electronically connected care for patients with chronic wounds. This research question was embedded into a project that aims at connecting healthcare providers treating patients with chronic wounds and at supporting them making decisions via a shared health IT platform.

2. Methods

In order to identify the prerequisites of management continuity and to eventually design an IT product according to providers' needs, the user requirements had to be elicited [6]. To this end, four expert workshops were conducted. Three of them were workshops taking place at different locations in Northern Germany during the period June to August 2017. They were either hosted by the University of Applied Sciences Osnabrück or the University Medical Centre Göttingen. A convenience sample of health professionals, who were members of a wound care network in north-western Germany or who were members of a professional society in this field, was invited to participate. During the workshops, the experts were asked about process and action decisions, general frictional losses in the treatment of patients with chronic wounds, potentially problematic decisions of young or unexperienced providers or caring relatives, usage criteria for IT, and information items needed. They were given a process diagram, a case study or mock-ups to stimulate the discussions. Each workshop ranged from 150 to 180 minutes. The results were summarised by two authors (MP, SV) and afterwards discussed and evaluated during a forth, national workshop at the end of August 2017. A selected convenience sample of a wide range of experts including representatives from professionals' associations, members of supra-regional networks and the wound supplies industry was invited.

During the first three workshops, one researcher (SW) visualised the results, which were later documented by photo. Additionally, all workshops were audio recorded and minutes were taken. Audio-records were partly transcribed verbatim. The total results were analysed using inductive content analysis [7] by MP with a focus on challenges and conditions for management continuity.

In total, 25 representatives of health care providing professions participated in the three local workshops: six physicians (dermatology: 2, vascular surgery: 2, casualty surgery, orthopaedics and plastic surgery: 1, internal medicine and diabetology: 1; in-patient care: 3, ambulatory care: 3), four nurses (ambulatory care: 2, in-patient care: 2), eight wound managers (ambulatory care: 4, in-patient care: 4), four orthopaedic mechanics and three other healthcare professionals. In total, 11 participants were male und 14 female. Eight participants attended the national workshop: two representatives from national specialist associations (Initiative Chronic Wounds (ICW), German Society for Vascular Surgery and Vascular Medicine (DGG)), two representatives from supra-regional networks and four from wound supplies manufacturers.

3. Results

The content analysis of the audio taped material yielded four main topics associated with management continuity: 1) working in networks, 2) single point of contact and co-ordination for patients/relatives, 3) discharge management, and 4) payers as part of the network.

Working in networks. Building networks, which the family doctors are part of, emerged as one of the most important points. The experts also expressed, that working in a network shapes the attitude of providers.

"But we are going ways, in which different professions – from in-patient and out-patient care – come together and work in the same manner. You come closer, and that is network-like, and that is good. Today, we must rethink, and we have to bring together the different actors." (Nurse 4)

In order to work properly in a network, participants expressed, that the providers should know their specific part and the services of the other providers. They also suggested an overview of the different services to support their own work.

„In the network, I know exactly, what the colleague can do, what I must tell him, and to make my decision. I have a contact person of whom I know that he can provide the appropriate professional care to the patient. If I do not know which operation someone offers, which know-how he has, I cannot talk to him. Before you link any data, you need to have or find people, who are specialised, have resources, so you can contact them. In my opinion, this is very important for a network, that you know the people." (Physician 5)

Within a network, in which the providers have access to information that is technologically linked, participants stated that findings can be exchanged faster, and "external professionals" can be included. This can lead to less frictional losses.

"[…] If it [the network] is supported electronically, this would be very favourable, there are less frictional losses, as you can access findings more easily." (Physician 5)

"Within this black box, many providers can access the data. Then there is the question, how 'external professionals' can access the data, probably in a restricted way." (Orthopaedic mechanic 1)

Single point of coordination. The participants stated, that patients and relatives need one provider who is in charge and who has an overview about the whole treatment process in order to achieve a coherent treatment. By and large, the family doctor fulfils this role, according to the experts, but they also said that the provider may change during the course of the treatment.

„In my opinion, it is important, that the patient has a person who is in charge, a "director", who says: 'I take care now, I pull the strings.' This can be the family doctor – in most cases it is him – but it can also be another expert, who says, 'Okay, we have the following problem. I try to integrate the others.' Otherwise, you get lost in the system. Then nobody is responsible, and then the information does not come together. A "director" is someone, who takes a matter firmly in hand, or who says at a certain point, 'I handover to another "director"', and passes it on. However, a physician must pull the strings, has to take the responsibility properly." (Physician 3)

Discharge management. During a transfer – if a transfer document is sent –, participants told about wounds partly not documented, about wound-related information not included, or about patients discharged on Wednesday afternoon, Friday, or on weekend without any dressing material or any general practitioner available.

„I've never read in a discharge summary, what kind of wounds a patient has, what diagnostics was done, what the results are, what dressing material was used. That is not common." (Physician 6)

The participants mentioned the German HL7 e-Nursing Summary, a standardised transfer document, to be sent to a nursing home or an ambulatory nursing service.

„There is […] a transfer document from […] the ‚Netzwerk Versorgungskontinuität in der Region Osnabrück'. […] It is the [German HL7] e-Nursing Summary." (Nurse 4)

Additionally, several participants mentioned the soon-to-be legal obligation to implement a proper discharge management, which would be a solution to the problem.

„Beginning with 01.10.2017, there is a clearly defined discharge management. Each hospital that does not adopt it has problems. That starts on 01.10.[2017], and that belongs to the everyday life in a hospital: transfer, discharge management from hospital to the ambulatory setting." (Supra-regional network 1)

Payers as part of the network. The experts, working in a network, identified insurance companies as an important player.

„You are missing an actor, namely the payers. They are whose, who approve prescriptions, or they do not. This is a difficulty, which the public probably has not yet perceived in detail, but which is a huge problem for the patients. (Physician 2)

Referring to the approval process, other participants also supported the importance of the payers as part of the system. In contrast to the past, they perceived the process to last longer, but be more standardised. They complained, that patients suffer, as they must wait longer or the wound worsens. Partly, institutions can compensate this situation temporarily by providing own material, but this is not possible for each patient, they said.

"We always have soft positioning foam mattresses in the house. If someone is at risk, or has a small pressure ulcer …" (Nurse 3) – *"Nice house, but it does this at its own charge. We also do this temporarily. Until a prescription is approved and until it arrives at the patient's home, much time passes, and that will not do. And it is getting worse. The approval processes are getting longer. Many decisions are armchair decisions. It's getting standardised, and nobody is interested any more"* (Nurse 4).

4. Discussion

The results of this study concur with the challenges stated by Haggerty et al. [1] regarding management continuity. As many providers are seeing the patient, a network with coherent standards and clinical pathways can contribute to timely and complementary service delivery. Thus, patients' confusion, which may arise, when different healthcare providers recommend different treatments [8], may be reduced. Such a network may also prevent violation of management continuity, which may arise when patients move from one setting to another [9]. Discharge management was addressed by the German legislation (§ 39 SGB V) and further regulations (Rahmenvertrag Entlassmanagement). However, these regulations do not explicitly oblige institutions to transfer relevant data timely as structured electronic documents based on international standards, like the German HL7 e-Nursing Summary [4] or e-Wound Summary [10]. Another important factor within a network is a co-ordinator for the clinical pathway in order to adapt to changes in the patient's needs and circumstances. The co-ordinators role is perceived to be stronger in a highly integrated network than in an poorly integrated one [11]. One crucial actor in the timely delivery of e.g. aids are the payers approving the prescriptions. Therefore, it is important to integrate them into the networks in order to speed up communication between providers and payers, to shorten the time until an aid or a service reaches the patient.

Management continuity as defined by Haggerty et al [1] may also contribute to decision support, and vice versa. *"A consistent and coherent approach to management*

of a health condition" [1] goes hand in hand with coherent standards and clinical pathways, which should be adapted to guidelines, which also allow flexibility to respond *"to a patient's changing needs"* [1].

5. Conclusion

This study demonstrates the importance of management continuity as part of continuity of care. It also reveals the prerequisites of successful implementation of information continuity via health IT. These requirements embrace health care networks that include the payers and are established prior to the implementation of health IT, single point of co-ordination and finally well-defined discharge management procedures.

6. Conflict of Interest

The authors state that they have no conflict of interests.

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